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DATE	JUN 17 2010
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June 17, 2010

Mr. John Kessler
Siting Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Subject: Rice Solar Energy Project (09-AFC-10)
Supplemental Information Item 2 (Materials for Air Quality and Public Health)

Dear Mr. Kessler:

Attached please find one original and 12 copies of Rice Solar Energy, LLC's Supplemental Information Item 2 for the Application for Certification for the Rice Solar Energy Project (09-AFC-10). In addition, enclosed are two CDs of Supplemental Information Item 2 – HARP, AERMOD, and ISCST3 Modeling Files.

If you have any questions about this matter, please contact me at (916) 286-0278 or Sarah Madams at (916) 286-0249.

Sincerely,

CH2M HILL

Douglas M. Davy, Ph.D.
AFC Project Manager

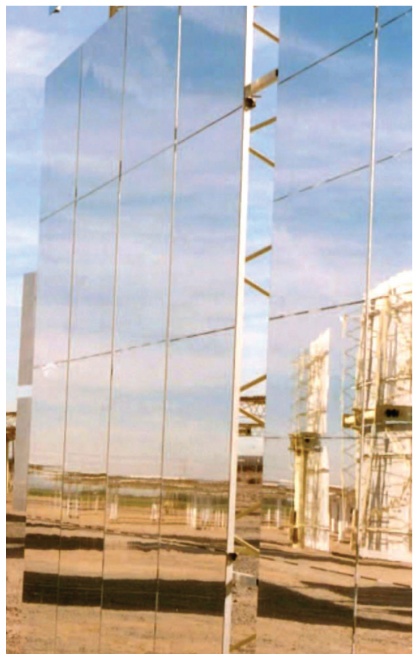
cc: POS List
Project File

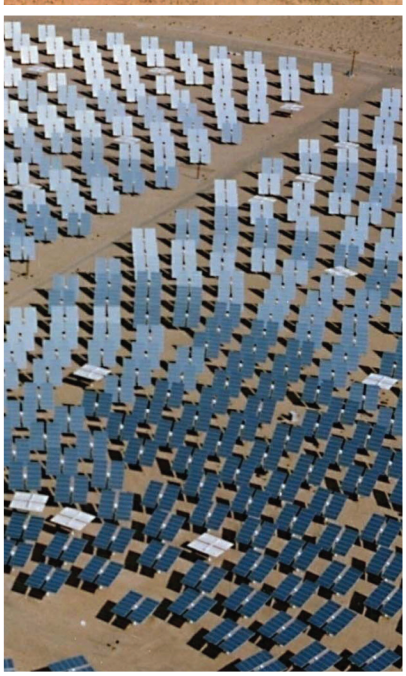
Supplemental Filing

Application for Certification

Supplemental Information Item 2 (Materials for Air Quality and Public Health)

Rice Solar Energy Project





Submitted by
SOLARRESERVE

Submitted to
California Energy Commission

With Technical Assistance by
CH2MHILL

June 2010

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Supplemental Filing

Supplemental Information Item 2
(Materials for Air Quality and Public Health)

In support of the

Application for Certification

for the

Rice Solar Energy Project

(09-AFC-10)

Submitted to the:

California Energy Commission

Submitted by:

SOLARRESERVE

With Technical Assistance by:

CH2MHILL

Sacramento, California

June 2010

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SII2-1 Caterpillar C175-16 Diesel Generator Emissions Data Sheet
SII2-2 Revised Emission Estimate Worksheets
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SECTION 1.0

Introduction

The information included in this second Supplemental Information Item (SII) (referred to as SII2) has been prepared in response to discussions with staff from the California Energy Commission (CEC) and the Mojave Desert Air Quality Management District (MDAQMD) that have occurred since the submittal of the CEC Workshop Query Responses 1–3 on April 16, 2010. These discussions resulted in the following changes to the operational phase air quality and public health analyses:

1. Replacement of the two 2.5-megawatt (MW) Cummins generators with two 3.0 MW Caterpillar generators
2. A revision of the maximum 1-hour emission rate for the emergency generators from a 30-minute test duration to a 60-minute test duration
3. A revision of the wet surface air cooler (WSAC) drift eliminator control efficiency from 0.005 percent to 0.0005 percent.

RSE recalculated the criteria pollutant, greenhouse gas, and toxic air contaminant (TAC) emission estimates to evaluate the potential air quality and public health impacts associated with the proposed changes. The dispersion modeling of the potential ambient air quality impacts and public health risk assessment were also updated to reflect the above changes.

This supplemental summary also provides additional details regarding the use of the background nitrogen dioxide (NO_2) data from the Alamo Lake State Park monitoring station. The background NO_2 data were incorporated in the revised 1-hour NO_2 modeling results and used to evaluate compliance with the state and federal NO_2 ambient air quality standards (AAQS).

Lastly, a qualitative discussion is provided to address the adequacy of the construction modeling assessment for the proposed MDAQMD temporary diesel engines permit conditions.

New or revised graphics or tables are numbered in reference to the Supplemental Information Item number. For example, the first table would be numbered Table SII2-1. The first figure would be Figure SII2-1, and so on.

SECTION 2.0

Air Quality

This supplemental air quality section responds to the following CEC requests:

- Update on operational criteria pollutant and greenhouse gas emissions
- Update on operational criteria pollutant modeling
- Details on the selection and use of the Alamo Lake State Park monitoring station
- A review of the applicability of the construction modeling results with the proposed permit conditions for the temporary diesel engines.

2.1 Updated Operational Criteria Pollutant and Greenhouse Gas Emissions

Due to operational requirements and the availability of equipment, RSE has proposed to replace the two 2.5 MW (3,600 horsepower [hp]) Cummins generators identified in the response to CEC Workshop Query #1 with two 3.0 MW (4,020 hp) Tier II–compliant Caterpillar C175-16 generator sets. The engine specifications and technical data for the CAT C175-16 engine are included as Attachment SII2-1. Based on discussions with the engine manufacturer, a 60-minute operational test duration is recommended to maintain the integrity and reliability of the engine performance. Therefore, RSE has also requested a revision of the maximum 1-hour emission rate to reflect a 60-minute test period. However, the maximum annual operating profile will be kept the same as originally proposed at 26 hours per year. It should be noted that no changes have been proposed for the 600 brake horsepower (bhp) diesel fire pump drivers since the Application for Certification (AFC) submittal.

RSE also reviewed the drift eliminator control efficiency requirements for the WSAC with CEC Staff and the MDAQMD permitting engineer. As stated in RSE's letter to the MDAQMD on May 7, 2010, RSE has voluntarily agreed to increase the drift eliminator control efficiency from 0.005 to 0.0005 percent for its small WSAC. Therefore, the WSAC emission rate has been modified to reflect the reduction in emissions.

Tables SII2-1 and SII2-2 present the revised criteria pollutant and greenhouse gas emissions for the individual units, as well as the revised facility emission totals. A copy of the revised AFC Appendix Tables 5.1B-6R, 5.1B-7R, 5.1B-8R, and 5.1B-9R are presented in Attachment SII2-2.

TABLE SII2-1 (REVISION TO AFC TABLE 5.1-14)
Revised RSEP Facility Emissions

	NOx	SO_2	VOC	CO	$PM_{10}/PM_{2.5}$
Maximum Hourly Emissions, lb/hr					
Emergency Generator (Unit 1)[a]	45.1	0.045	0.89	5.59	0.27
Emergency Generator (Unit 2)[a]	45.1	0.045	0.89	5.59	0.27
Emergency Fire Pump (Unit 1)[b]	1.91	0.0033	0.030	0.37	0.07
Emergency Fire Pump (Unit 2)[b]	1.91	0.0033	0.030	0.37	0.07
WSAC	—	—	—	—	0.02
Total Project (lb/hr)	**94.1**	**0.097**	**1.83**	**11.92**	**0.69**
Maximum Facility Daily Emissions, lb/day[c]					
Emergency Generator (Unit 1)	45.1	0.045	0.89	5.59	0.27
Emergency Generator (Unit 2)	45.1	0.045	0.89	5.59	0.27
Emergency Fire Pump (Unit 1)	1.91	0.0033	0.030	0.37	0.07
Emergency Fire Pump (Unit 2)	1.91	0.0033	0.030	0.37	0.07
WSAC	—	—	—	—	0.36
Total Project (lb/day)	**94.1**	**0.097**	**1.83**	**11.92**	**1.04**
Maximum Annual Emissions, lb/yr[d]					
Emergency Generator (Unit 1)	1174	1.17	23.1	145.3	6.9
Emergency Generator (Unit 2)	1174	1.17	23.1	145.3	6.9
Emergency Fire Pump (Unit 1)	99.1	0.17	1.56	19.2	3.6
Emergency Fire Pump (Unit 2)	99.1	0.17	1.56	19.2	3.6
WSAC	—	—	—	—	67
Total Project (lb/yr)	**2546**	**2.7**	**49.2**	**329**	**88**
Total Project (tpy)	**1.27**	**0.0013**	**0.025**	**0.16**	**0.04**

[a]Worst-case hourly emissions were based on 60 minutes of testing per unit.

[b]Worst-case hourly emissions were based on 30 minutes of testing per unit.

[c]Daily diesel engine emissions based on one test per unit per day. Daily WSAC emissions are based on 24 hours per day.

[d]Annual emissions for the engines are based on 26 hours of operation per unit. The annual WSAC emissions are based on 4,400 hours of operation.

CO = carbon monoxide
lb/hr = pound(s) per hour
lb/yr = pound(s) per year
NOx = nitrous oxide
$PM_{10}/PM_{2.5}$ = particulate matter less than 10 microns and 2.5 microns
SO_2 = sulfur dioxide
tpy = ton(s) per year
VOC = volatile organic compounds

TABLE SII2-2 (REVISION TO AFC TABLE 5.1-16)
Estimated Annual Greenhouse Gas Emissions

	Estimated Emissions (metric tons/year)			
	CO_2	CH_4	N_2O	CO_2 Equivalent
Emergency Generator (Unit 1)	56	0.002	0.0005	56
Emergency Generator (Unit 2)	56	0.002	0.0005	56
Emergency Fire Pump (Unit 1)	8.3	0.0003	0.0001	8
Emergency Fire Pump (Unit 2)	8.3	0.0003	0.0001	8
Total Emissions	**129**	**0.005**	**0.001**	**129**

2.2 Updated Criteria Pollutant Modeling Results

The dispersion modeling for the operational impacts was updated to evaluate the potential impacts associated with the new CAT C175-16 diesel engines, the increase to 60 minutes of operational testing and maintenance for each CAT C175-16 engine, and the more efficient drift eliminator for the WSAC unit. The dispersion modeling approach was consistent with the ISCST3 with screening meteorological data modeling approach presented in the AFC submittal in October 2009 with the exception of 1-hour NO_2. Because the predicted 1-hour NO_2 concentrations resulting from the conservative screening modeling approach would exceed the 1-hour state and federal AAQSs, the U.S. Environmental Protection Agency's (EPA's) AERMOD ozone limiting method (OLM) algorithm was used to further refine the predicted concentrations. The AERMOD-OLM approach further refines the predicted 1-hour NO_2 impacts by assuming approximately 10 percent of the combustion stack emissions are emitted as NO_2 and the balance as NO, which would be converted to NO_2 based on the quantity of ozone available. The emission rates and exhaust parameters were changed to reflect the proposed updates. A summary of the updated source locations, parameters, and emission rates for the dispersion modeling is provided in Attachment SII2-3.

The results of the revised operational modeling are presented in Table SII2-3. The results indicate that RSEP would not cause or contribute to the violation of NO_2, CO, SO_2, and $PM_{2.5}$ standards. Therefore, the predicted project impacts from these criteria pollutants would remain less than significant with the updated modeling assessment. For PM_{10}, the background concentration exceeds the AAQSs even before adding the modeled concentrations. As a result, the predicted project impact plus background also exceeds the AAQSs. However, operation of the project will only emit up to one pound of particulate per day from stationary sources even if all engines are tested at 100 percent load and the WSAC unit is operated 24 hours per day. Furthermore, the use of screening meteorological data, the use of the heliostat perimeter fence line, and the modeling assumptions used for the mirror washing truck operations would also result in a conservative estimate of the project impacts. With this conservatism included in the analysis, the PM_{10} impacts are expected to be less than four percent of background concentration at the heliostat fence line. Therefore, the project is not expected to significantly contribute to existing violations of the PM_{10} AAQS. Therefore, the PM_{10} impacts from operation would be less than significant for the updated modeling assessment.

The updated dispersion modeling files will be submitted on CD-ROM concurrent with this report.

TABLE SII2-3 (REVISION TO TABLE DR27-1)
Revised Operation Impacts Analysis—Maximum Modeled Impacts Compared to the Ambient Air Quality Standards

Pollutant	Averaging Time	Maximum Modeled Concentration[a] ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Predicted Concentration ($\mu g/m^3$)	State Standard ($\mu g/m^3$)	Federal Standard ($\mu g/m^3$)
NO_2[c]	Annual	0.33	4.9	5.2	57	100
SO_2	1-hour	0.60	47.1	47.7	655	—
	3-hour	0.39	31.4	31.8	—	1,300
	24-hour	0.010	13.1	13.1	105	365
	Annual	0.00038	2.6	2.6	—	80
CO	1-hour	80	2634	2714	23,000	40,000
	8-hour	13	973	986	10,000	10,000
PM_{10}	24-hour	8.2	211	219	50	150
	Annual	1.2	56	57	20	—
$PM_{2.5}$	24-hour	1.0	26.7	27.7	—	35
	Annual	0.1	9.9	10.0	12	15

[a]The maximum modeled 1-hour concentrations were estimated assuming only one of the emergency generators would be tested at a time. The 3-hour, 8-hour, 24-hour, and annual concentrations were estimated assuming the emergency generators, fire pumps, WSAC unit, and the vehicle emissions associated with mirror washing would occur within the averaging period.

[b]Background concentrations were the highest concentrations monitored during 2006 through 2008.

[c]Maximum annual NO_2 concentrations assume 100 percent conversion of NO_x to NO_2.

$\mu g/m^3$ = micrograms per cubic meter

Updated 1-Hour NO2 Modeling Results

The RSEP operational phase impacts were remodeled using the EPA AERMOD dispersion model (version 09292) to demonstrate compliance with the new federal 1-hour NO_2 AAQS that became effective on April 12, 2010, and the existing state 1-hour AAQS. The 1-hour NO_2 modeling incorporated AERMOD-OLM. Sources with identical stack and plume conditions were grouped together using the OLMGROUP model selection. The pre-processed Blythe Airport AERMET meteorological data files and the hourly ozone data files for years 2002 through 2004 were provided by CEC Staff for this modeling assessment. An annual average background ozone concentration of 29.6 parts per billion was used in place of any missing hourly data, as suggested by CEC Staff. Receptor locations were consistent with the previous RSEP modeling assessments, and receptor elevations and hill heights were determined using AERMAP (version 09040) and National Elevation Dataset terrain files.

The updated operational phase results presented in Table SII2-4 represent the first high and highest eighth-high (H8H) modeled concentration, along with the maximum background NO_2 concentration of 29.4 $\mu g/m^3$ from the Alamo Lake State Park monitoring station. Based on the updated dispersion modeling effort, the predicted 1-hour NO_2 concentration will be in compliance with both the 1-hour state and federal NO_2 AAQSs.

As discussed in the AFC, the modeling approach for the construction and salt commissioning activities is conservatively based on the occurrence of the salt melting, heating, and conditioning processes concurrent with the peak construction activities taking place during months 18 to 21. Therefore, the maximum 1-hour and H8H NO_2 concentration presented in Table SII2-4 are for the combined salt commissioning and peak construction activities. The predicted 1-hour NO_2 concentrations under this conservative approach are in compliance with both the 1-hour state and federal NO_2 AAQSs.

TABLE SII2-4 (REVISION TO TABLE WSQ1-1)
Revised Predicted 1-hour NO_2 Impacts Compared to the State and National Ambient Air Quality Standard

Scenario	Modeled Concentration (μg/m^3)	Background Concentration[a] (μg/m^3)	Total Predicted Concentration (μg/m^3)	Standard (μg/m^3)
Construction/Salt Commissioning[b]	210[c]	29.4	239	338 (state)
	155[d]	29.4	184	188 (federal)
Operations[e]	179[c]	29.4	208	338 (state)
	126[d]	29.4	155	188 (federal)

[a]Background concentrations were based on the 2005 and 2006 Alamo Lake State Park monitoring data.

[b]Salt commissioning impacts include the maximum construction impacts during months 18 through 21.

[c]Maximum predicted first high 1-hour NO_2 concentration.

[d]3-year average of the maximum predicted H8H NO_2 concentration.

[e]The maximum modeled 1-hour concentrations were conservatively estimated assuming that the following activities would be conducted within the same hour: one of the emergency generators would be tested for 60 minutes and the onsite heliostat wash trucks would be operating throughout the hour.

2.3 Alamo Lake State Park Monitoring Station Data

As noted in the RSEP Dispersion Modeling Protocol submitted to the CEC and MDAQMD in September 2009, the Alamo Lake State Park monitoring station (located in La Paz County, Arizona) is expected to be the most representative of the RSEP location because it is a desert location with little urban development and a limited number of combustion sources nearby. It is therefore appropriate for RSEP to use data at this station for background concentration to demonstrate compliance with the applicable AAQSs. The following sections provide further support for the use of the background concentrations from this station.

2.3.1 Location and Surrounding Land Use

The Palm Springs air monitoring station is the closest California NO_2 monitoring station to the project site. The monitoring station is about 100 miles west of the project site. However, NO_2 data were also available for 2005 and 2006 from the Alamo Lake State Park monitoring station, which is located about 70 miles east of the project site (Figure SII2-1).

The Palm Springs monitoring station is located in Riverside County in the Salton Sea Air Basin while the Alamo Lake monitoring station is located in La Paz County, Arizona.

Although the project site is also located in Riverside County, it is in a different air basin known as the Mojave Desert Air Basin. Although the Blythe and Joshua Tree monitoring stations are also near the project site, the Blythe monitoring station and the Joshua Tree monitoring station do not record NO_2 concentrations.

The project site is in a rural, unpopulated area adjacent to State Route (SR) 62 and approximately 30 miles north of Interstate 10 (Figure SII2-2). According to the Riverside County Transportation and Land Management Agency (TLMA), the project site area is zoned as "open space – rural." No industrial sources are present in the vicinity of the project site, and the closest residential area, Vidal Junction, is approximately 15 miles northeast of the project site.

The terrain and surrounding areas of the project site and Alamo Lake monitoring station are very similar (Figure SII2-3). The Alamo Lake State Park monitoring station is in a rural unpopulated area adjacent to Cholla Road and approximately 50 miles north of Interstate 10. According to the La Paz County Comprehensive Plan, the Alamo Lake monitoring station is in an area zoned as "open space" and "parks and recreation." No industrial sources are present in the vicinity of the monitoring station, and the nearest residential areas are 30 to 40 miles southeast, southwest, and northwest of the station.

In contrast to the RSEP and Alamo Lake locations, the Palm Springs air monitoring station is in a densely populated area approximately 3 miles southwest of Interstate 10 (Figure SII2-4). According to the Riverside County TLMA, the monitoring station is in an area primarily zoned for residential, commercial, and city use. Therefore, based on the surrounding land use, the Alamo Lake State Park monitoring station is expected to be more representative of the RSEP site.

2.3.2 Likely Sources of NO_2 in Proximity to Sites

NO_2 emissions result from both stationary and mobile sources. In 2008, stationary sources contributed to approximately 29 percent of the total NO_2 emission inventory for the Mojave Desert Air Basin (Table SII2-5) and only 3 percent of the total NO_2 emission inventory for Riverside County (Table SII2-6). Therefore, stationary sources are not expected to be a significant source of NO_2 within the 6-mile modeling domain. In contrast, approximately 70 percent of the emissions in the Mojave Desert Air Basin and 95 percent of emissions in Riverside County are due to emissions from mobile sources (Tables SII2-5 and SII2-6).[1]

Because the mobile sources represent the majority of the NO_2 emissions in Riverside County and the Mojave Desert Air Basin, it is expected that the air quality in the Palm Springs area differs significantly from that of the project site and the Alamo Lake monitoring station because of its proximity to several major highway arterials (e.g., Interstate 10 and SR 111) and the high volume of vehicular traffic in the city of Palm Springs. For instance, the Palm Springs monitoring station is located near Interstate 10 (less than 3 miles) where more than 160,000 vehicles per day[2] access the highway near the monitoring station area. This capacity

[1] California Air Resources Board. 2008. Emissions Inventory by County. http://www.arb.ca.gov/ei/maps/statemap/cntymap.htm. Date Accessed: 05/19/2010. Database Search Parameters: Riverside County and Mojave Desert Air Basin.

[2] California Department of Transportation. 2008. Traffic Data Counts. http://traffic-counts.dot.ca.gov/. Date Accessed: 05/04/2010. Database Search Parameters: 2008 and Interstate 10.

is more than 70 times the number of vehicles that access the roads near the RSEP site and the Alamo Lake State Park monitoring station.

TABLE SII2-5
2008 Estimated Annual Average Emissions (tons/day)—Mojave Desert Air Basin

	TOG	ROG	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$
Total stationary sources	63.8	16.0	27.7	**78.8**	7.6	84.2	46.2	22.0
Total area sources	35.1	15.8	25.6	**2.2**	0.1	270.2	141.5	21.3
Total mobile sources	67.4	61.1	378.3	**191.5**	1.2	12.1	11.9	10.5
Total for Mojave Desert	166.3	92.9	431.6	**272.4**	8.9	366.5	199.6	53.8

Note: Approximately 70 percent of the total daily emissions are a result of mobile sources.

PM = total particulate matter
ROG = reactive organic gases
TOG = total organic gases

TABLE SII2-6
2008 Estimated Annual Average Emissions (tons/day)—Riverside County

	TOG	ROG	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$
Total stationary sources	18.73	12.75	2.29	**4.59**	0.49	6.17	3.75	1.72
Total area sources	66.46	22.26	12.80	**2.89**	0.07	120.73	60.75	10.31
Total mobile sources	55.10	50.01	431.75	**145.82**	0.66	8.00	7.90	6.36
Total for Riverside County	140.30	85.01	446.84	**153.29**	1.22	134.90	72.39	18.39

Note: Approximately 95 percent of the total daily emissions are a result of mobile sources.

In contrast, the Alamo Lake State Park monitoring station is located in a remote area near Cholla and Alamo roads. Alamo Road originates in the town of Wenden, Arizona, approximately 30 miles south of the monitoring station. At this location, only about 2,100 vehicles per day[3] access the road. Similarly, the traffic counts near the project site on SR 62 are approximately 2,700 vehicles per day.[4] Therefore, NO_2 concentrations are likely to be similar for the RSEP site and the Alamo Lake monitoring station because of the lack of other contributing sources near the areas and the relatively low traffic counts compared to the traffic counts in the vicinity of the Palm Springs monitoring station.

Table SII2-7 summarizes the major roadways near each of the sites, traffic volumes, and nearest stationary sources. Note the similarities between the Alamo Lake State Park monitoring station and the project site with respect to nearby traffic corridors and proximity to stationary sources compared to the Palm Springs station.

[3] Arizona Department of Transportation. 2008. Annual Average Daily Traffic. http://www.azdot.gov/mpd/data/aadt.asp. Date Accessed: 05/18/2010. Database Search Parameters: 2008, Highway 60, and Wenden, AZ.

[4] California Department of Transportation. 2008. Traffic Data Counts. http://traffic-counts.dot.ca.gov/. Date Accessed: 05/04/2010. Database Search Parameters: 2008 and Highway 62.

TABLE SII2-7
Proximity of Sites to Nearby Roadways and Stationary NO_x Sources

Site	Nearby Roadway and Distance	Daily Traffic Count	Nearest Stationary NO_2 Source	NO_2 Source and Emissions (tons/yr)	Source Distance (miles)
Palm Springs	Interstate 10 3 miles	169,000	Mitsubishi Cement Lucerne Valley, CA	2,403	37
Alamo Lake State Park	SR 60 31 miles	2,100	Dayton Superior Corp., Parker, AZ	1	43
Project Site	SR 62 1 mile	2,700	Blythe Energy Blythe, CA	15	32

2.3.3 Wind Climatology and Geography

A review of the California surface wind flow patterns indicates that the predominant wind directions in the western portion of Riverside County near the Palm Springs monitoring station tend to blow from the northwest throughout the year.[5] The surface wind flow patterns in the eastern portion of the Mojave Desert Air Basin, which includes the project site, also tend to blow from the north and northwest during the fall and winter months. However, the wind flow patterns in the Mojave Desert Air Basin blow primarily from the west and southwest during the spring and summer months. In areas near the Palm Springs monitoring station, the air flow patterns are also influenced by the surrounding geography in that area. Elevated terrain is located on both sides of the Interstate 10 corridor (Figure SII-2). Thus, it is likely that NO_2 and other emissions would remain localized or confined to this area during low wind and stagnant conditions, resulting in the detections of elevated concentrations of pollutants at the Palm Springs monitoring station. Air pollutants near the project site and Alamo Lake State Park monitoring station, however, are less likely to become “trapped” primarily because there are no localized NO_2 emission sources and the areas surrounding both locations are relatively open and well ventilated spaces. Thus, concentrations near the project site and the Alamo Lake State Park monitoring station are expected to be more similar than the project site compared to the Palm Springs monitoring station.

2.3.4 Conservative Background Predictions for Fall and Winter Months

Based on the plot of the maximum daily 1-hour NO_2 concentrations, the NO_2 concentrations recorded at the Palm Springs station were significantly higher and more variable than the NO_2 concentrations recorded at the Alamo Lake State Park monitoring station (Figures SII2-5 and SII2-6). As previously discussed, it is reasonable to conclude that the higher concentrations at the Palm Springs station were, in part, a result of the higher volume of mobile sources present, since they are the primary source of NO_2 in Riverside County and the surrounding geography.

In order to estimate the NO_2 concentrations at the Alamo Lake State Park monitoring station for the months without monitoring data in 2005 and 2006, the Alamo Lake State Park data

5 California Air Resources Board. 1992. California Surface Wind Climatology. January.

were compared to the same 2 years of data collected at the Palm Springs monitoring station. As shown in Figures SII2-5 and SII2-6, the NO_2 concentrations at Palm Springs trend higher during the months preceding winter and trend lower as summer approaches. In general, there are several factors that are likely to contribute to the observed seasonal trends for NO_2 values. These factors are traffic density; meteorological conditions such as temperature, relative humidity, and duration of sunshine; and proximity to other sources of emissions.

Although there does not appear to be an upward trend in the Alamo Lake State Park NO_2 data either in the preceding spring months or the following winter months (Figures SII2-5 and SII2-6), the potential seasonal trends at Alamo Lake State Park were conservatively estimated by applying the same seasonal behavior observed at the Palm Springs monitoring station (Table SII2-8).

TABLE SII2-8
NO_2 Data for Palm Springs and Alamo Lake State Park Monitoring Stations

Period	Seasonal Palm Springs Average Concentrations (ppm)	Maximum Alamo Lake Concentration (ppm)	Seasonal Ratio of Palm Springs Data	Predicted Seasonal Alamo Lake Concentration (ppm)	Predicted Seasonal Alamo Lake Concentration (μg/m^3)
2005					
Jan-Feb-Mar	0.0254	NA	1.42	0.0156	29.4
Apr-May-Jun	0.0179	0.011	1.42	0.0156	29.4
Jul-Aug-Sep	0.0236	0.010	NA	0.010	18.8
Oct-Nov-Dec	0.0338	0.004*	1.43	0.0057	10.8
2006					
Jan-Feb-Mar	0.0291	NA	1.71	0.0137	25.7
Apr-May-Jun	0.0170	0.008	1.71	0.0137	25.7
Jul-Aug-Sep	0.0197	0.013	NA	0.013	24.5
Oct-Nov-Dec	0.0345	0.006	1.75	0.0105	19.8

*No data were available for Alamo Lake State Park in October 2005. Therefore, the maximum concentration measured during the month of September 2005 was used.

ppm = parts per million

For example, the maximum predicted Alamo Lake State Park winter background concentrations (January, February, and March) were based on the winter to spring (April, May, and June) ratio of the average maximum daily 1-hour for Palm Springs multiplied by the maximum daily 1-hour NO_2 concentration recorded at the Alamo Lake State Park monitoring station during the spring months. Similarly, the maximum predicted fall concentrations for the missing months of November and December were based on the fall to summer ratio for Palm Springs multiplied by the maximum daily 1-hour NO_2 concentration recorded at the Alamo Lake State Park monitoring station during the month of October.

Based on this conservative approach, the predicted maximum 1-hour NO_2 background concentration for either 2005 or 2006 is 29.4 μg/m^3 (i.e., 0.011 ppm or 20.7 μg/m^3 recorded in

May 2005 multiplied by the Palm Springs winter to spring ratio of 1.42:1). By using the higher of the predicted background concentrations (i.e., 29.4 µg/m^3) with the modeled concentrations for comparison to the federal and state 1-hour NO_2 standards, the compliance determination would be conservative.

2.3.5 Alamo Lake State Park Monitoring Station Data Quality

Last but not least, the NO_2 data from the Alamo Lake State Park monitoring station have been reviewed using quality assurance procedures that meet the EPA requirements for background monitoring, including biweekly verification and precision checks. The purpose of the monitoring station at Alamo Lake State Park is to assist in forecasting regional ozone transport. The Arizona Department of Environmental Quality's monitoring efforts are focused on the summer months because of the presence of elevated ozone concentrations during those months.

2.3.6 Summary of the Supporting Information for the Alamo Lake State Park Monitoring Station

The RSEP site is approximately 100 miles east of the Palm Springs monitoring station and 70 miles west of the Alamo Lake State Park monitoring station. A comparison of the nearby sources of NO_2 was made to investigate the representativeness of each station compared to the RSEP site. Based on this investigation, it is concluded that the predominant source of NO_2 for all three sites would be mobile sources and that the Palm Springs station is largely affected by higher daily traffic counts in this urban area. Conversely, the Alamo Lake State Park and RSEP sites are located in open rural areas, which are set apart from major stationary sources and are near roadways with relatively low traffic counts compared to Palm Springs. Furthermore, the terrain in the area surrounding the Palm Springs monitoring station is expected to hinder air mass flows, leading to relatively stagnant conditions, suppression of vertical mixing, and conditions that have the potential to result in higher measured NO_2 concentrations at this site. Because of the differences in the terrain surrounding the Alamo Lake State Park and the project site, these conditions are not found at the Alamo Lake State Park or project site.

Finally, the potential for elevated concentrations of NO_2 at the Alamo Lake State Park monitoring station during the late fall and winter months was conservatively accounted for by extrapolating the seasonal variations in the Palm Springs data. Based on this approach, it was conservatively estimated that the maximum background NO_2 concentration at the Alamo Lake State Park monitoring station would be 29.4 µg/m^3. For all the reasons cited above, the Alamo Lake State Park monitoring station and the maximum predicted background concentration of 29.4 µg/m^3 were used to determine compliance with applicable AAQSs.

2.4 Construction Modeling Results and Proposed Temporary Permit Conditions Consistency

In order to streamline compliance, RSE has proposed to group the temporary, stationary diesel engine generators by size and aggregate the allowable annual operating hours for all engines in the group. The CEC Staff requested an additional assessment of this proposed condition for consistency with the modeling methodology because the proposed aggregate permit condition potentially would allow all the temporary permitted engines to operate up to 24 hours per day or shift the location of the annual emissions.

Upon further review of this issue, it is concluded that the completed dispersion modeling results do account for this condition. All the temporary generators are assumed to operate at least 8 hours per day in the air dispersion modeling; therefore, the aggregate permit condition would not impact the modeling results for averaging periods less than 8 hours (see AFC Appendix Table 5.1A-29).

For the 24-hour and annual PM_{10} and $PM_{2.5}$ impacts, the MDAQMD is requiring that temporary stationary electrical generators be equipped with diesel particulate traps to meet the requirements of the diesel air toxic control measure, which will reduce the emission rates used in the dispersion modeling by 85 percent. Furthermore, the emission estimates used for the air dispersion modeling analysis assumed that the diesel engines located closest to the fence line, which are the engine generators for the construction living trailers and the office trailers, would be operated 24 hours per day, 7 days a week and 14 hours per day, 7 days a week, respectively. Therefore, the additional diesel particulate matter control will more than offset any potential increase in operating hours for other sources farther away from the fence line within a 24-hour period.

For 24-hour and annual SO_2 concentrations, the predicted SO_2 impacts are considerably lower than the AAQSs. For instance, the maximum predicted 24-hour and annual SO_2 impacts for the combined construction and commissioning activities with background added is 26.1 $\mu g/m^3$ and 2.6 $\mu g/m^3$, respectively (see AFC Table 5.1-19). These values are less than 25 percent and 4 percent of the applicable air quality standards. Therefore, it is unlikely that the proposed group permit limit for the temporary stationary diesel engines would cause an exceedance of the 24-hour or annual AAQSs for SO_2.

For annual NO_2, the maximum predicted NO_2 concentration for the construction activity is 17.9 $\mu g/m^3$ with the inclusion of the background concentration of 4.9 $\mu g/m^3$ (see AFC Table 5.1-19). This value conservatively assumes 100 percent conversion of NOx to NO_2 and is less than 32 percent of the applicable air quality standards. Also, because the proposed aggregation of hours would only redistribute the location of the annual emissions NOx, it is unlikely that the proposed aggregate permit conditions for the temporary stationary diesel engine generators would cause an exceedance of the annual AAQS for NO_2.

SECTION 3.0

Public Health

This supplemental public health section responds to the following CEC requests:

- Updated operational TAC pollutant emission estimates
- Updated operational TAC risk assessment

3.1 Updated TAC Emission Calculations

Due to operational requirements and the availability of equipment, the two 2.5 MW (3,600 hp) Cummins generators identified in the response to CEC Workshop Query #1 have been replaced with two 3.0 MW (4,020 hp) Tier II–compliant Caterpillar C175-16 generator sets. The engine specifications and technical data for the CAT C175-16 engine are included as Attachment SII2-1. Based on discussions with the engine manufacturer, a 60-minute test duration is recommended to maintain the integrity and reliability of the engine performance. Therefore, RSE also requests a revision of the maximum 1-hour emission rate to reflect a 60-minute test period. However, the maximum annual operating profile will be kept the same as originally proposed at 26 hours per year.

The WSAC TAC emission rates also have been modified to reflect the increase in the drift eliminator control efficiency from 0.005 to 0.0005 percent.

Table SII2-9 presents the revised TAC emissions for the individual units, as well as the revised facility emission totals. Copies of the revised AFC appendix tables are presented in Attachment SII2-2.

TABLESII2-9 (REVISION TO AFC TABLE 5.9-1)
Revised TAC Pollutant Emission Rates Modeled for the RSEP

Pollutant	Chemical Abstract Service	Emergency Generator* (per engine)		Diesel Fire Pump* (per engine)		WSAC	
		lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
Benzene	71432	1.99E-02	5.17E-01	2.92E-03	1.52E-01	—	—
Formaldehyde	50000	1.84E-01	4.79E+00	2.71E-02	1.41E+00	—	—
Total PAHs (minus naphthalene)	1151	3.86E-03	1.00E-01	5.68E-04	2.95E-02	—	—
Naphthalene	91203	2.10E-03	5.46E-02	3.09E-04	1.61E-02	—	—
Acetaldehyde	75070	8.35E-02	2.17E+00	1.23E-02	6.39E-01	—	—
Acrolein	107028	3.62E-03	9.40E-02	5.32E-04	2.77E-02	—	—
1,3 Butadiene	106990	2.32E-02	6.03E-01	3.41E-03	1.77E-01	—	—
Chlorobenzene	108907	2.13E-05	5.55E-04	3.14E-06	1.63E-04	—	—
Propylene	115071	4.98E-02	1.29E+00	7.33E-03	3.81E-01	—	—

TABLESII2-9 (REVISION TO AFC TABLE 5.9-1)
Revised TAC Pollutant Emission Rates Modeled for the RSEP

Pollutant	Chemical Abstract Service	Emergency Generator* (per engine)		Diesel Fire Pump* (per engine)		WSAC	
		lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
Hexane	110543	2.87E-03	7.46E-02	4.22E-04	2.19E-02	—	—
Toluene	108883	1.12E-02	2.92E-01	1.65E-03	8.60E-02	—	—
Xylenes	1330207	4.52E-03	1.18E-01	6.65E-04	3.46E-02	—	—
Ethyl Benzene	100414	1.16E-03	3.02E-02	1.71E-04	8.89E-03	—	—
Hydrogen Chloride	7647010	1.99E-02	5.17E-01	2.92E-03	1.52E-01	—	—
Arsenic	7440382	1.71E-04	4.44E-03	2.51E-05	1.31E-03	4.28E-07	1.88E-03
Cadmium	7440439	1.60E-04	4.16E-03	2.35E-05	1.22E-03	6.85E-08	3.01E-04
Hexavalent Chromium	18540299	1.07E-05	2.77E-04	1.57E-06	8.16E-05	—	-
Copper	7440508	4.37E-04	1.14E-02	6.43E-05	3.35E-03	2.05E-07	9.04E-04
Lead	7439921	8.85E-04	2.30E-02	1.30E-04	6.77E-03	3.25E-07	1.43E-03
Manganese	7439965	3.31E-04	8.60E-03	4.86E-05	2.53E-03	1.03E-07	4.52E-04
Mercury	7439976	2.13E-04	5.55E-03	3.14E-05	1.63E-03	5.13E-09	2.26E-05
Nickel	7440020	4.16E-04	1.08E-02	6.12E-05	3.18E-03	1.7.E-07	7.53E-04
Selenium	7782492	2.35E-04	6.10E-03	3.45E-05	1.79E-03	4.45E-07	1.96E-03
Zinc	7440666	2.39E-03	6.21E-02	3.51E-04	1.83E-02	—	-
Fluoride	1101	—	—	—	—	1.56E-04	6.85E-01
Silica	1175	—	—	—	—	5.48E-04	2.41E+00
Vanadium	7440622	—	—	—	—	6.50E-07	2.86E-03
Diesel Particulate Matter	9901	2.66E-01	6.92E+00	7.00E-02	3.64E+00	—	—

*The chronic hazard index and the incremental cancer risks were estimated based on the annual diesel particulate matter emissions. The acute hazard index was estimated based on the individual speciation factors for diesel fired internal combustion engines.

PAH = polyaromatic hydrocarbon

3.2 Revised Health Risk Assessment Results

The health risk assessment for RSEP was updated to evaluate the potential impacts associated with the proposed changes to the RSEP emergency generators and the WSAC unit. The updated risk analysis was conducted using the same dispersion modeling and risk assessment approach used in the AFC.

The revised predicted incremental increase in cancer risk at the point of maximum impact (PMI) is approximately 0.77 in one million using the Derived Adjusted Method. The overall incremental increase in cancer risk is lower for the new proposed engine because the diesel PM_{10} emission rate decreased from 0.14 gram per bhp (g/bhp) to 0.03 g/bhp. The maximum impact remains located along the southwest portion of the heliostat fence line.

This maximum predicted incremental increase in cancer risk at the PMI is below the MDAQMD significance threshold of 1 in one million. The proposed changes to the RSEP emergency generators and WSAC unit result in a decrease in the predicted incremental cancer risks (both the Derived OEHHA and Derived Adjusted values). Therefore, the updated predicted impacts remain less than significant for all receptors (i.e., residential, worker, and sensitive) based on MDAQMD Regulation 13, Rule 1320. Because the predicted Derived Adjusted cancer risk is less than 1 in one million and there are no residents within 6 miles of RSEP, the cancer burden would be zero. Therefore, the cancer burden also would remain less than significant.

The maximum chronic hazard index increment at the PMI is predicted to be 0.0058. The maximum acute hazard index at the PMI is predicted to be approximately 0.59. The maximum predicted chronic and acute impacts are located along the southwestern portion of the heliostat fence line. The chronic and acute index increments are both below the MDAQMD significance threshold of 1.0. Therefore, the predicted impact from the proposed project would remain less than significant with the proposed changes to the RSEP emergency generators and WSAC unit for all receptors within 6 miles of the facility.

The potential health impacts at the PMI are summarized in Table SII2-10. Additionally, the revised Hot Spots Analysis and Reporting Program (HARP) report files will be submitted to the CEC on CD-ROM concurrent with this report.

TABLE SII2-10 (REVISION TO AFC TABLE 5.9-3)
Updated Health Risk Assessment Summary: Facility

Risk	Receptor Number	Value	Universal Transverse Mercator (NAD 27)
Cancer Risk at the PMI (Derived OEHHA Method)	3339	0.99 per million	(701,342; 3,770,638)
Cancer Risk at the PMI (Derived Adjusted Method)	3339	0.77 per million	(701,342; 3,770,638)
Chronic Hazard Index at the PMI	3339	0.0058	(701,342; 3,770,638)
Acute Hazard Index at the PMI	3339	0.59	(701,342; 3,770,638)

OEHHA = Office of Environmental Health Hazard Assessment

Figures

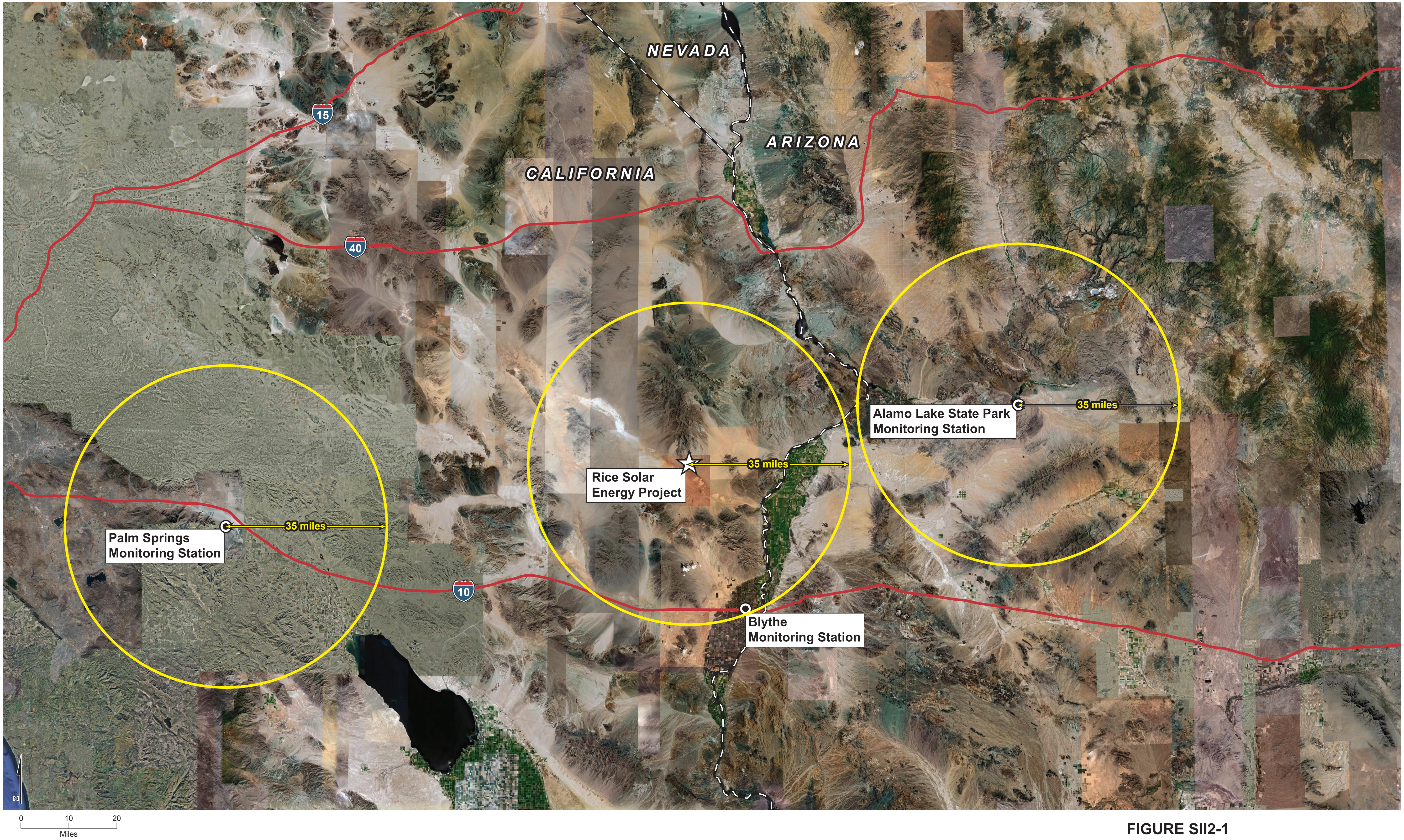

FIGURE SII2-1
PROJECT SITE AND SURROUNDING AIR MONITORING STATIONS
Rice Solar Energy Project
Riverside County, California

Aerial courtesy of Google™ Earth, 2010. Image ©2010 DigitalGlobe, USDA Farm Service Agency, US Navy, USGS, and County of San Bernardino.

EY072009005SAC Figure_SII2-1.ai 06.16.2010 tdaus

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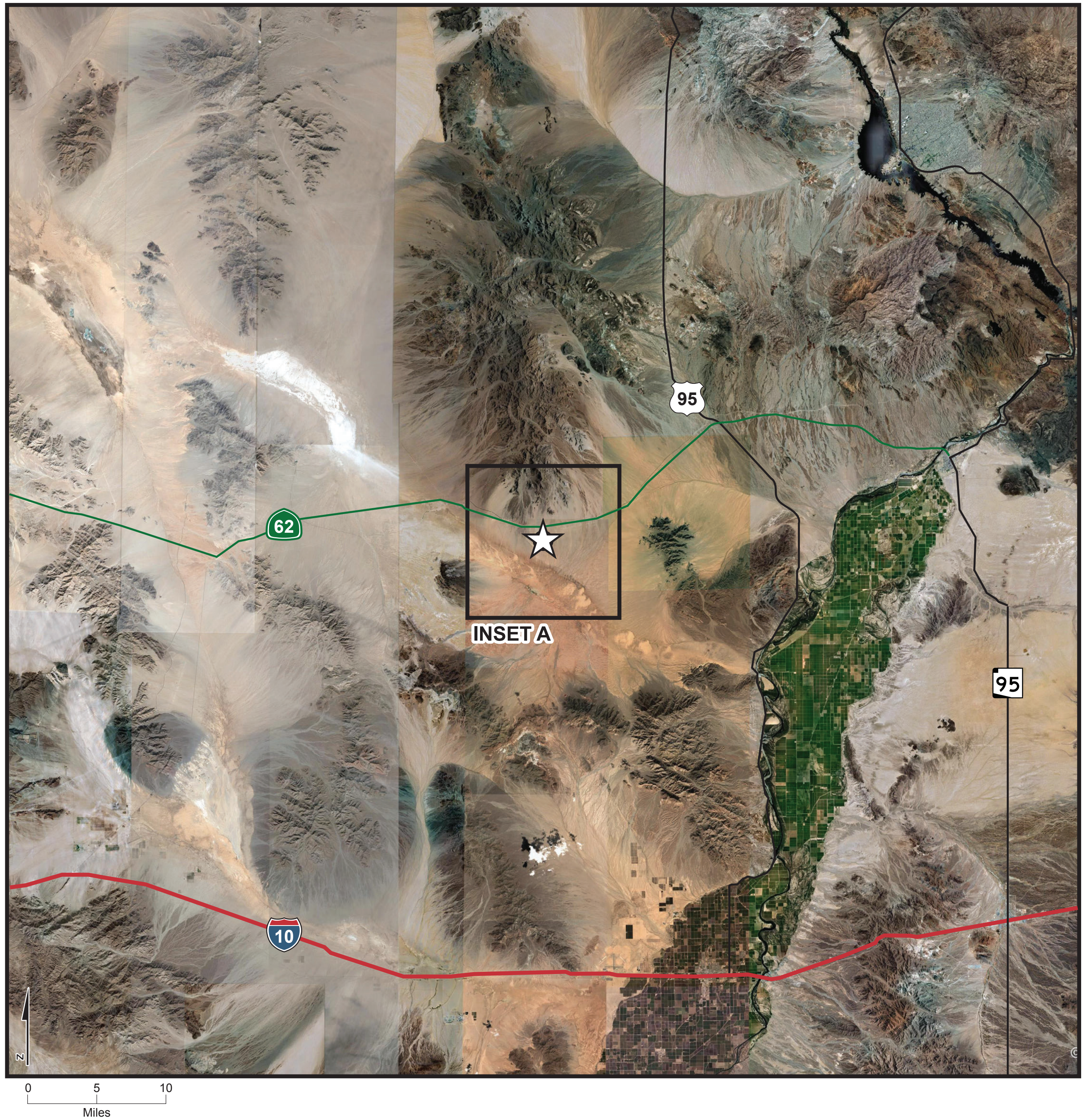
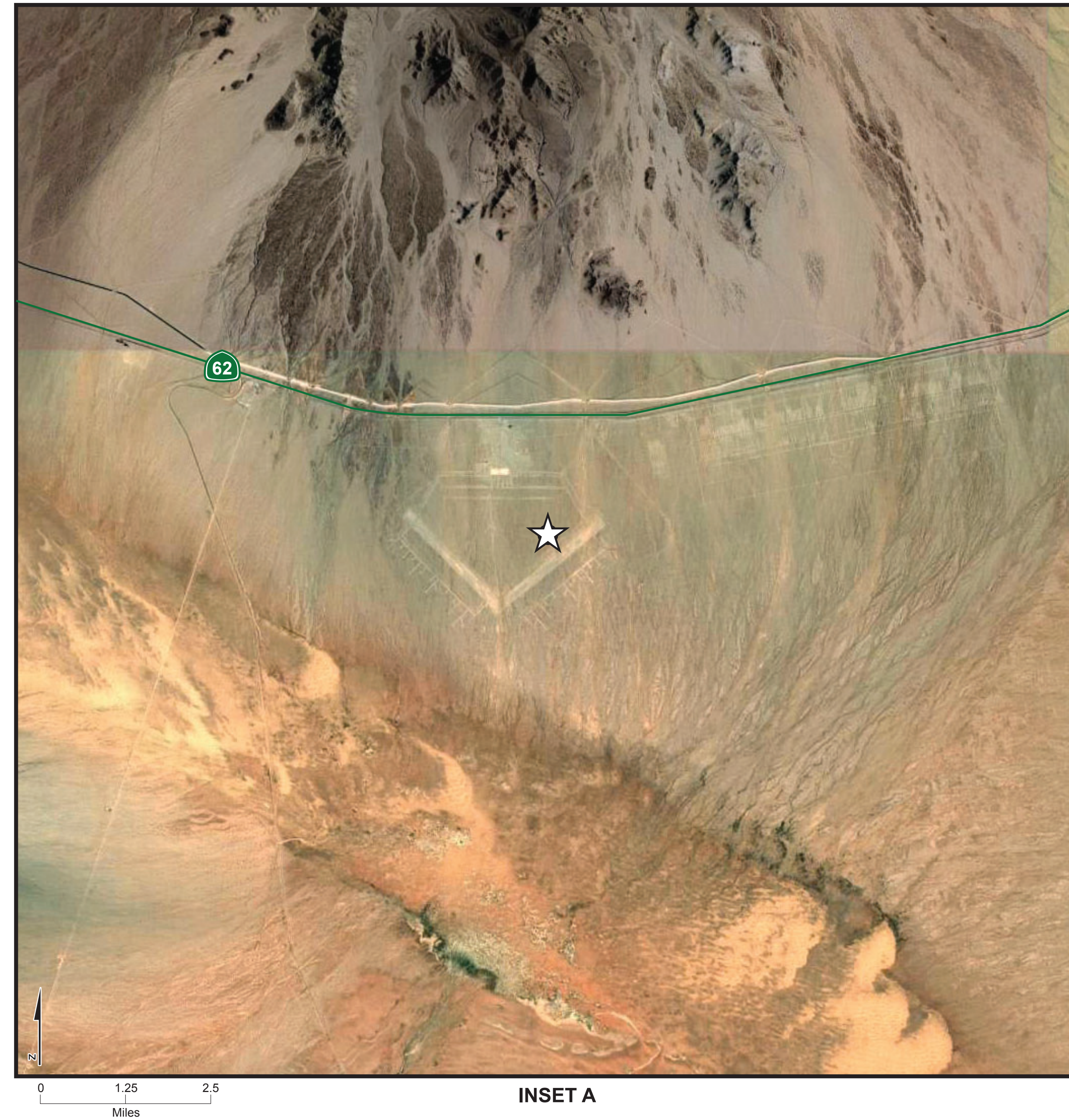
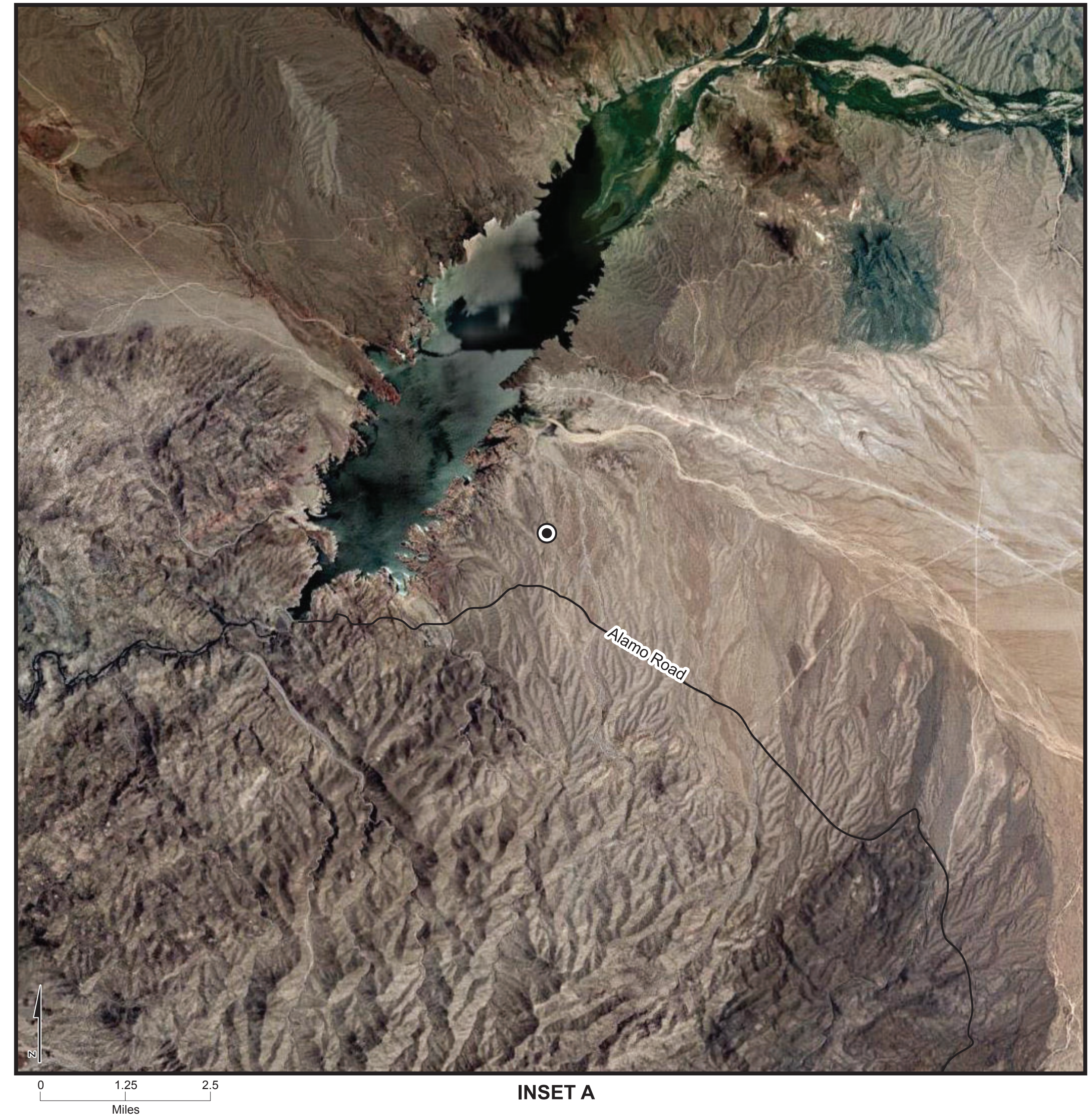




INSET A

FIGURE SII2-2
SITE LOCATION
Rice Solar Energy Project
Riverside County, California

Aerial courtesy of Google™ Earth, 2010. Image ©2010 DigitalGlobe and USDA Farm Service Agency.



INSET A

FIGURE SII2-3
ALAMO LAKE STATE PARK
MONITORING STATION
Rice Solar Energy Project
Riverside County, California

Aerial courtesy of Google™ Earth, 2010. Image ©2010 DigitalGlobe and USDA Farm Service Agency.

EY072009005SAC Figure_SII2-3.ai 06.16.2010 tdaus

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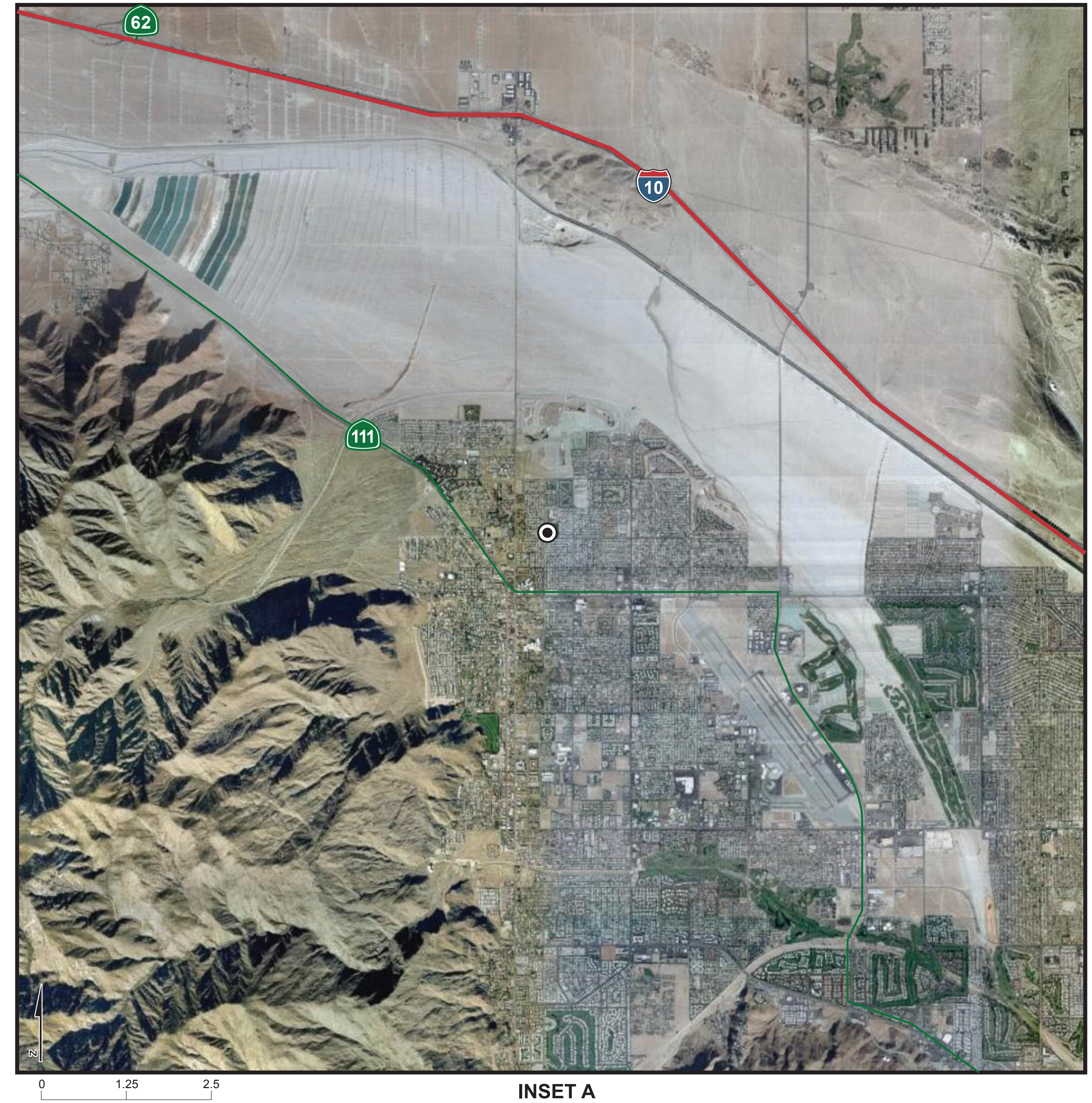

INSET A

FIGURE SII2-4
PALM SPRINGS FIRE STATION MONITORING STATION
Rice Solar Energy Project
Riverside County, California

Aerial courtesy of Google™ Earth, 2010. Image ©2010 DigitalGlobe, USDA Farm Service Agency, US Navy, USGS, and County of San Bernardino.

EY072009005SAC Figure_SII2-4.ai 06.16.2010 tdaus

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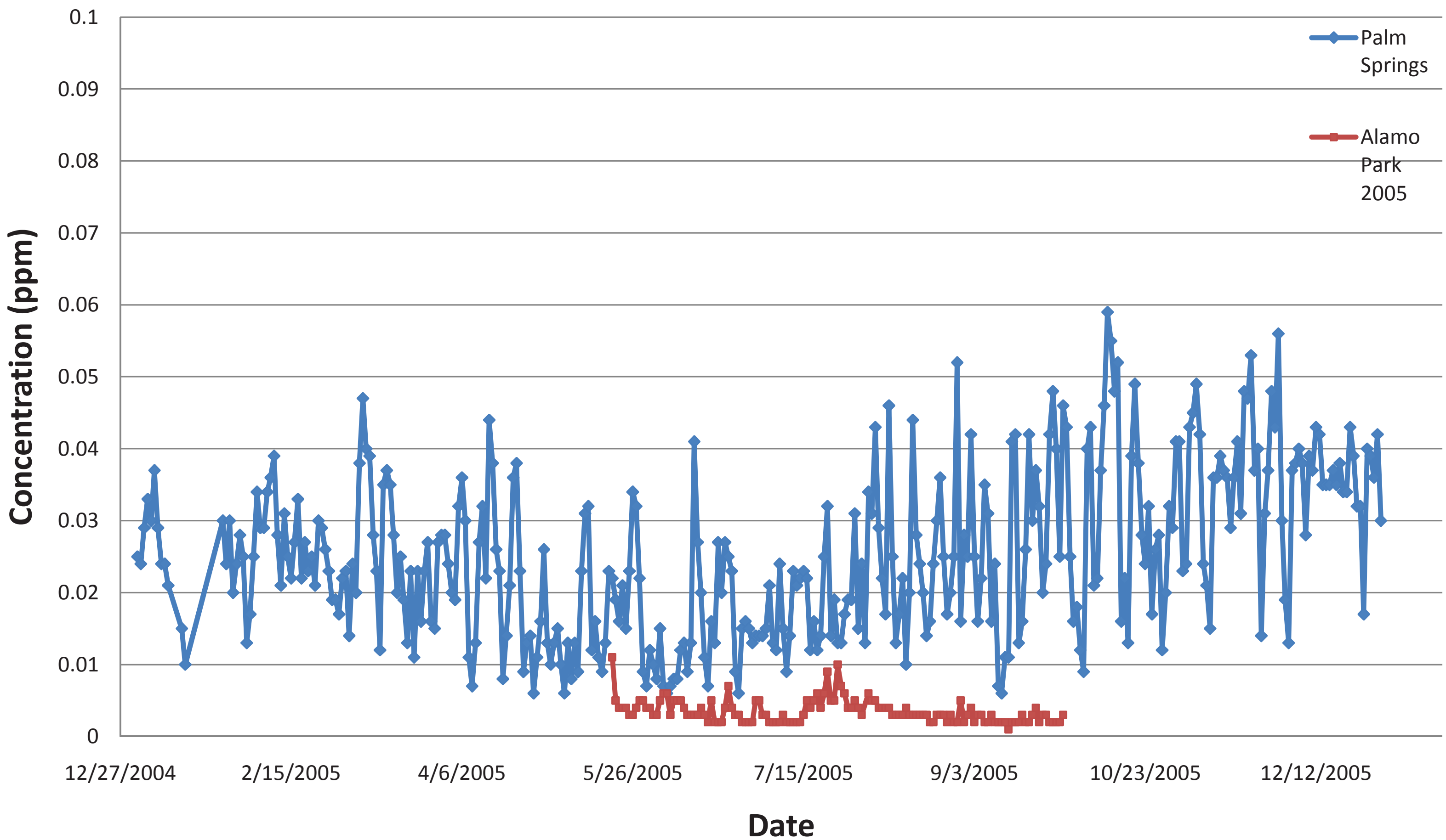

FIGURE SII2-5
2005 ALAMO LAKE AND PALM SPRINGS MAXIMUM DAILY 1-HOUR NO_2
Rice Solar Energy Project
Riverside County, California

Source: CEC, 2010.

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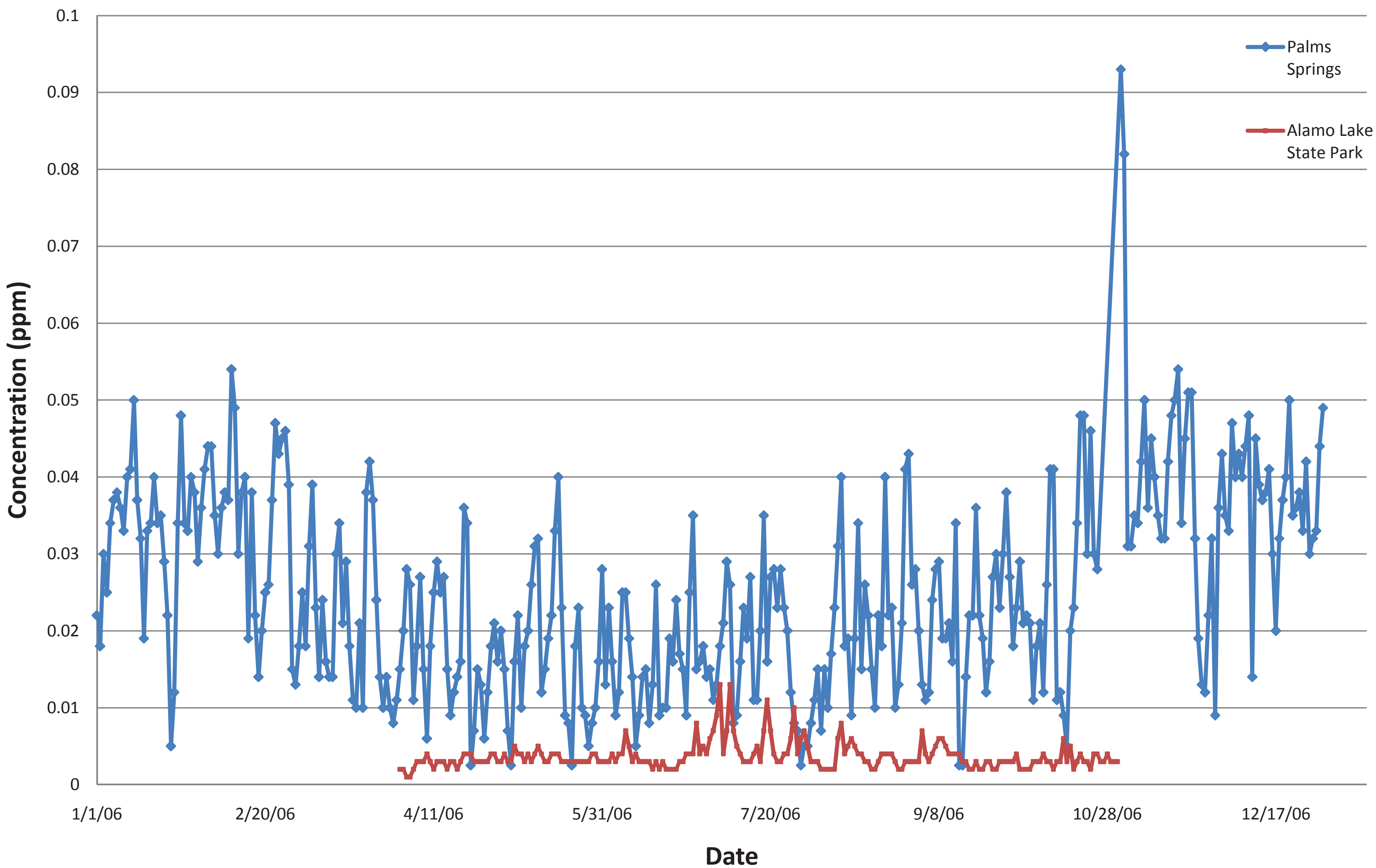

Source: CEC, 2010.

FIGURE SII2-6
2006 ALAMO LAKE AND PALM SPRINGS MAXIMUM DAILY 1-HOUR NO_2
Rice Solar Energy Project
Riverside County, California

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Attachment SII2-1
Caterpillar C175-16 Diesel Generator Emissions Data Sheet

DIESEL GENERATOR SET


Image shown may not reflect actual package

Standby
3000 ekW 3750 kVA
60 Hz 1800 rpm
4160 Volts

Caterpillar® is leading the power generation market place with power solutions engineered to deliver unmatched performance, reliability, durability and cost-effectiveness.

FEATURES

EMISSIONS / FUEL STRATEGY
- EPA Tier 2

DESIGN CRITERIA
- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response.

FULL RANGE OF ATTACHMENTS
- Wide range of bolt-on attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

SINGLE SOURCE SUPPLIER
- Fully prototype tested with field validation

WORLDWIDE PRODUCT SUPPORT
- Caterpillar® dealers provide extensive post-sale support including maintenance and repair agreements
- Caterpillar dealers have over 1,600 dealer branch stores operating in 200 countries
- CAT SOS℠ program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

CAT C175-16 DIESEL ENGINE
- Reliable and durable
- Four-stroke diesel engine combines superior performance with excellent fuel economy
- Advanced electronic engine control
- Low installation and operating cost

CAT SR5 GENERATOR
- Designed to match performance and output characteristics of Caterpillar diesel engines
- Industry leading mechanical and electrical design
- Industry leading motor starting capabilities
- High efficiency

CAT EMCP3 CONTROL PANELS
- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway

Factory Installed Standard & Optional Equipment

System	Standard	Optional
Air Inlet	• Air cleaner; 4 x single element canister with service indicator(s) • Plug group for air inlet shut-off	• Air cleaner; 4 x dual element with service indicator(s) • Air inlet adapters
Control Panel	• EMCP 3.1 (set mounted)	• EMCP 3.2 or 3.3 • Local & remote annunciator modules • Discrete I/O module • Generator temperature monitoring & protection • Remote monitoring • Load share module
Cooling	• SCAC cooling • Jacket water and AC inlet / outlet flanges	• Remote horizontal SCAC radiator • Remote fuel cooler • Low coolant level sensor (for remote radiators)
Exhaust	• Dry exhaust manifold • Bolted flange (ANSI 6" & DIN 150) with bellow for each turbo (qty 4)	• Engine Exhaust Temperature Module • Mufflers (15dBA, 25dBA, or 40dBA) • 20" vertical exhaust collector • Weld flange ANSI 20"
Fuel	• Primary fuel filter with water separator • Secondary/ tertiary fuel filters (engine mounted)	
Generator	• SR5 generator - 3 phase brushless, salient pole - IEC platinum stator RTDs - Cat Digital Voltage Regulator (CDVR)	• Space heater kit • Oversized generators • Power connection arrangement
Governor	• ADEM™ A4	• Redundant shutdown
Lubrication	• Lubricating oil • Oil filter, filler and dipstick • Oil drain line with valves • Fumes disposal • Gear type lube oil pump • Integral lube oil cooler	• Electric prelube pump
Mounting	• Rails-engine / generator • Rubber anti-vibration mounts (shipped loose)	• Spring type linear vibration isolators • IBC vibration isolators
Starting / Charging	• Dual 24 volt electric starting motors • Batteries with rack and cables • Battery disconnect switch	• Oversized battery set • 75 amp charging alternator • Battery chargers (20 amp) • Jacket water heater • Ether starting aid
Crankcase Systems	• Open crankcase ventilation	• Crankcase explosion relief valve
Circuit Breakers		(No set mounted circuit breakers available on medium or high voltage packages)
General	• RH service (Except LH Service Oil Filter) • SAE standard rotation • Paint - Caterpillar yellow with high gloss black rails • Flywheel and flywheel housing - SAE N0. 00	• Barring group- manual or air powered • Factory test reports

CAT C175 ENGINE

Engine	C175	
Number of cylinders	16	
Cycle	Four stroke	
Cooling	Water	
Bore	175 mm	6.89 inches
Stroke	220 mm	8.66 inches
Displacement	84.67 L	5166.63 in^3
Compression ratio	15.3:1	
Aspiration	TA	
Cooling type	SCAC	
Fuel system	Common Rail	
Governor type	ADEM™ A4	

CAT SR5 GENERATOR

Frame	1846
Insulation class (UL1446 recognized)	H
Temperature rise @ 40C ambient	150 °C
Winding type	Form
Winding connection	Star (wye)
Winding pitch	0.6667
Excitation	PM
Motor starting capability @30% voltage dip and 0.4 pf (skVA)	8350 skVA
Number of poles	4
Number of bearings	2
Number of leads	6
Number of phases	3
IP rating	IP23
Overspeed capability - % of rated	125%
Wave form deviation	Less than 3%
Telephone Influence Factor (TIF)	Less than 50
Harmonic distortion	Less than 5%
Heat rejection to atmosphere	125.0 kW

CAT CDVR VOLTAGE REGULATOR

Caterpillar Digital Voltage Regulator (CDVR)	
Microprocessor based	
VAR/PF control	
RFI suppression	
Minimum / maximum excitation limiter	
Exciter diode monitor	
Direct 3 phase sensing with selectable volts/Hz	
Communicates with EMCP3	
Programmable operating characteristics	
Compatible with SE, PM and IE excitation	
Voltage regulation steady state	less than +/- 0.25%

CATERPILLAR EMCP 3 CONTROLS

Features	EMCP3.1 (Standard)	EMCP 3.2 (Optional)	EMCP 3.3 (Optional)
• 12-24 Volt (nominal) DC control	X	X	X
• Run/Auto/stop control	X	X	X
• Display size (mm)	24x95	24x95	28x100
• Display size (pixels)	33 x132	33 x132	64x240
• Display available in any of 26 languages with text translation capability	X	X	X
• Temperature operating range -40 C to 70 C (-40 F to 158 F), (display to -20 C/-4 F)	X	X	X
• Designed for mounting on generator set package (vibration tested to 4.3G sinusoidal and 15G shock)	X	X	X
• 3-phase, true RMS metering	X	X	X
• Generator metering accuracy (+/- X%)	2	1	1
• Metering - L-L volts, L-N Volts, phase Amps, Hz	X	X	X
• Digital indications for RPM, operating hours, oil pressure, coolant temperature and system DC voltage	X	X	X
• Two LED indicators for common warning/shutdown alarms (i.e. low oil pressure, high coolant temperature, low coolant level, over-speed, emergency stop, failure to start due to over crank, etc.)	X	X	X
• Reset all events function	X	X	X
• Voltage adjust when CDVR is on J1939 data-link	X	X	X
• Integrates with ADEM engine governor for engine monitoring, alarms, and control	X	X	X
• Integrates with Caterpillar Digital Voltage Regulator (CDVR) for alarms and control	X	X	X
• Compatible with Caterpillar ET service tool for enhanced serviceability including data capturing from event log, data logging, set point programming and troubleshooting	X	X	X
• Field re-flashable software ensures the customers get the latest updated software	X	X	X
• Programmable switch inputs	4	6	6
• Programmable relay outputs (2A continuous DC)	4	6	6
• Integration with programmable annunciator module - local/remote (NFPA 99-110) (optional)		Maximum 4	Maximum 4
• Integration with programmable discrete I/O (DIO) module (optional)		Maximum 4	Maximum 4
• Programmable discrete outputs		1	2
• Additional configurable Input (0-2 kOhm resistive sender)		1	1
• Programmable protective relaying functions - under/over voltage, under/over frequency and phase over-current		X	X
• Programmable kW level relay		X	X
• Power metering - ekW, kVA, kVAR, kWhr, %kW, PF		X	X
• Built in Modbus isolated data link (RS –485 half-duplex) that supports serial communication at data rate up to 57.6 kbaud and functions as a communications gateway to the customer's SCADA system or device, providing all generator set data for remote monitoring, automatically generated monthly reports, trending/graphing, storing events history, etc.		X	X
• Free Modbus RTU / remote monitoring PC software		X	X
• Engine crank attempt counter		X	X
• Engine successful start counter		X	X
• Service maintenance interval (engine hrs & real-time)		X	X
• Engine oil temperature in ºC or ºF (optional)		X	X
• Real time clock		X	X
• Programmable cycle timer		X	X
• Programmable protective relaying function - reverse power			X
• Enhanced engine monitoring - intake/exhaust manifold, SCAC inlet, oil and fuel temperatures; fuel, crankcase and intake manifold pressures; oil, fuel and air filter restrictions; instant and total fuel consumption - where supported by Engine Control Module (ECM)			X
• Integration with RTD module for generator temperature monitoring (optional)			Maximum 1
• Integration with thermocouple module(s) for generator temperature monitoring (optional)			Maximum 2

TECHNICAL DATA

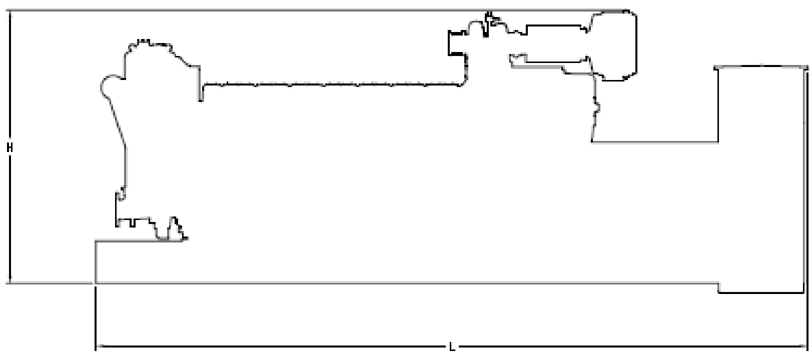
EPA Tier 2		
Generator Set Package Performance	**Units**	
Generator set power rating @ 0.8 pf	3750 kVA	
Generator set power rating with fan *	3000 ekW	
Generator set rated voltage	4160 Volts	
Generator set rated current @0.8 pf (Amps)	520.5 Amps	
Air Inlet		
Combustion air inlet flow rate	264.9 m3/min	9356 cfm
Cooling System		
Coolant to aftercooler temp max	46°C at 30°C ambient	115°F at 86°F ambient
Emissions (Nominal[1]**)**		
NOx+ HC		5.19 g/bhp-hr
CO		0.63 g/bhp-hr
HC		0.1 g/bhp-hr
PM		0.03 g/bhp-hr
Exhaust System		
Exhaust stack gas temperature	473.7°C	884.6°F
Exhaust gas flow rate (Wet)	695.6 m3/min	24,565.7 cfm
Exhaust system backpressure (max. allowable)	6.7 kPA	26.9 in water
Exhaust flange size (internal diameter)	150 mm	6 inches
Fuel Consumption		
100% Load with fan	807.4 L/hr	213.3 Gal/hr
75% Load with fan	616.3 L/hr	162.8 Gal/hr
50% Load with fan	489.1 L/hr	129.2 Gal/hr
Heat Rejection		
Heat rejection to coolant (total)	1,377.8 kW	78,423.0 Btu/min
Heat rejection to exhaust (total)	3,107.6 kW	176,885.0 Btu/min
Heat rejection to aftercooler (Stage 2)	494.2 kW	28,128.0 Btu/min
Heat rejection to atmosphere from engine	275.8 kW	15,698.0 Btu/min
Heat rejection to atmosphere from generator	125.0 kW	7,115.0 Btu/min
Lube System		
Sump refill with filter	540 L	142.6 Gal

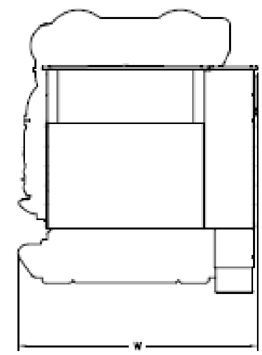
* The generator set package is not offered with an engine driven radiator. The addition of an engine driven fan will not reduce the output below the nameplate rating.

1. Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

Package Dimensions and Weights

Length	6,464.7 mm	254.51 in
Width	2,089.4 mm	82.26 in
Height	2,211.1 mm	87.05 in
Approx. Package Weight- Dry	18,510 kg	40,800 lbs





RATING DEFINITIONS AND CONDITIONS

Ratings are based on SAE J1995 standard conditions. These ratings also apply at ISO3046 standard conditions.

Standby - Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year. Standby power in accordance with ISO8528. Fuel stop power in accordance with ISO3046. Standby ambients shown indicate ambient temperature at 100% load which results in a coolant top tank temperature just below the shutdown temperature.

Additional Ratings may be available for specific customer requirements. Consult your Caterpillar representative for details.

Meets or Exceeds International Specifications: AS1359, CSA, IEC60034, ISO3046, ISO8528, NEMA MG 1-33, UL508A, 98/37/EC

Fuel Rates are based on fuel oil of 35º API (16º C or 60º F) gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29º C (85º F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.).

Emissions Data measurement procedures are consistent with those described in EPA CFR 40 Part 89, subpart D and E, and ISO8178-1 for measuring HC, CO, PM and NOx. Data shown is based on steady state operating conditions of 77ºF, 28.42 in HG and number 2 diesel fuel with 35º API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare EPA regulations which use values based on a weighted cycle.

Performance Number: DM8448
Feature Code: 175DE11
Generator Arrangement: 252-3974
U.S Sourced
December 2008

www.CAT-ElectricPower.com

Attachment SII2-2
Revised Emission Estimate Worksheets

Table 5.1B-6R
Rice Solar Energy Project
Emergency Backup Generator Emission Estimates - Engine 1
June 2010

Test Frequency:	26	assume one 1-hour test per month and an extra 14 hours for maintenance/emergency use
Test Duration:	1.00	hour
Expected Annual Operation:	26	hours/year

Source Data:

Engine:	1 (3,000 KW)	Unit & Descriptions
Make:	Caterpillar	
Model:	C175-16	
Rated Horsepower:	4,020	BHP at 1800 RPM
Max. Diesel Usage:	213.3	Gal/hr at full load w/ fan
Stack height:	20	ft above ground
Stack Id:	STK 4	
Stack diameter:	24	in.
Exhaust temperature:	884.6	°F
Exhaust flowrate:	24,566	ACFM

Assumes 1 kW = 1.34 hp

Criteria Pollutants	Emission Factors (g/HP/hr)	Emission Rates[a] (lb/hr)	Annual Emissions[a] (lb/yr)	
NOx (Expressed as NO2):	5.09	45.11	1173	
Non-methane HC:	0.10	0.89	23.0	
PM:	0.03	0.27	6.91	
CO:	0.63	5.58	145.2	
SO2[b]:	-	0.05	1.17	For 15 ppm S Diesel Fuel

[a] Based on 60 minutes of operation per week and 26 hours per year for maintenance and testing.
[b] Based on fuel consumption, fuel density of 7.05 lb/gal, 15 ppm ULSD, and complete combustion to SO2

Greenhouse Gases	Emission Factors (kg/MMBtu)	Annual Emissions (metric tons/yr)
CO2:	73.10	56.22
CH4:	0.0030	0.002
N2O:	0.0006	0.0005

Greenhouse gas emission factors from the ARB Mandatory Reporting of Greenhouse Gas Emissions (17 CCR §95100-95133)
Greenhouse gas emissions calcuated using a diesel heat content of 5.825 MMBtu/barrel from the ARB Mandatory Reporting of Greenhouse Gas Emissions (17 CCR §95100-95133)

TAC Emissions:	Emission Factor (lb/Mgal)	Emissions (lb/hr)	Emissions (lb/yr)	CAS
Benzene	0.1863	2.0E-02	5.17E-01	71432
Formaldehyde	1.7261	1.8E-01	4.79E+00	50000
Total PAHs (minus Naphthalene)	0.0362	3.9E-03	1.00E-01	1151
Naphthalene	0.0197	2.1E-03	5.46E-02	91203
Acetaldehyde	0.7833	8.4E-02	2.17E+00	75070
Acrolein	0.0339	3.6E-03	9.40E-02	107028
1,3 Butadiene	0.2174	2.3E-02	6.03E-01	106990
Chlorobenzene	0.0002	2.1E-05	5.55E-04	108907
Propylene	0.467	5.0E-02	1.29E+00	115071
Hexane	0.0269	2.9E-03	7.46E-02	110543
Toluene	0.1054	1.1E-02	2.92E-01	108883
Xylenes	0.0424	4.5E-03	1.18E-01	1330207
Ethyl Benzene	0.0109	1.2E-03	3.02E-02	100414
Hydrogen Chloride	0.1863	2.0E-02	5.17E-01	7647010
Arsenic	0.0016	1.7E-04	4.44E-03	7440382
Cadmium	0.0015	1.6E-04	4.16E-03	7440439
Hexavalent Chromium	0.0001	1.1E-05	2.77E-04	18540299
Copper	0.0041	4.4E-04	1.14E-02	7440508
Lead	0.0083	8.9E-04	2.30E-02	7439921
Manganese	0.0031	3.3E-04	8.60E-03	7439965
Mercury	0.0020	2.1E-04	5.55E-03	7439976
Nickel	0.0039	4.2E-04	1.08E-02	7440020
Selenium	0.0022	2.3E-04	6.10E-03	7782492
Zinc	0.0224	2.4E-03	6.21E-02	7440666
Total TAC (lbs/year)			10.79	

TAC Reference: Ventura County Air Pollution Control District, 2001

Table 5.1B-7R
Rice Solar Energy Project
Emergency Backup Generator Emission Estimates - Engine 2
June 2010

Test Frequency:	26	assume one 1-hour test per month and an extra 14 hours for maintenance/emergency use
Test Duration:	1.00	hour
Expected Annual Operation:	26	hours/year

Source Data:

Engine:	1 (3,000 KW)	Unit & Descriptions
Make:	Caterpillar	
Model:	C175-16	
Rated Horsepower:	4,020	BHP at 1800 RPM
Max. Diesel Usage:	213.3	Gal/hr at full load w/ fan
Stack height:	20	ft above ground
Stack Id:	STK 5	
Stack diameter:	24	in.
Exhaust temperature:	884.6	°F
Exhaust flowrate:	24,566	ACFM

Assumes 1 kW = 1.34 hp

Criteria Pollutants	Emission Factors (g/HP/hr)	Emission Rates[a] (lb/hr)	Annual Emissions[a] (lb/yr)	
NOx (Expressed as NO2):	5.09	45.11	1173	
Non-methane HC:	0.10	0.89	23.0	
PM:	0.03	0.27	6.91	
CO:	0.63	5.58	145.2	
SO2[b]:	-	0.05	1.17	For 15 ppm S Diesel Fuel

[a] Based on 60 minutes of operation per week and 26 hours per year for maintenance and testing.
[b] Based on fuel consumption, fuel density of 7.05 lb/gal, 15 ppm ULSD, and complete combustion to SO2

Greenhouse Gases	Emission Factors (kg/MMBtu)	Annual Emissions (metric tons/yr)
CO2:	73.10	56.22
CH4:	0.0030	0.002
N2O:	0.0006	0.0005

Greenhouse gas emission factors from the ARB Mandatory Reporting of Greenhouse Gas Emissions (17 CCR §95100-95133)
Greenhouse gas emissions calcuated using a diesel heat content of 5.825 MMBtu/barrel from the ARB Mandatory Reporting of Greenhouse Gas Emissions (17 CCR §95100-95133)

TAC Emissions:	Emission Factor (lb/Mgal)	Emissions (lb/hr)	Emissions (lb/yr)	CAS
Benzene	0.1863	2.0E-02	5.17E-01	71432
Formaldehyde	1.7261	1.8E-01	4.79E+00	50000
Total PAHs (minus Naphthalene)	0.0362	3.9E-03	1.00E-01	1151
Naphthalene	0.0197	2.1E-03	5.46E-02	91203
Acetaldehyde	0.7833	8.4E-02	2.17E+00	75070
Acrolein	0.0339	3.6E-03	9.40E-02	107028
1,3 Butadiene	0.2174	2.3E-02	6.03E-01	106990
Chlorobenzene	0.0002	2.1E-05	5.55E-04	108907
Propylene	0.467	5.0E-02	1.29E+00	115071
Hexane	0.0269	2.9E-03	7.46E-02	110543
Toluene	0.1054	1.1E-02	2.92E-01	108883
Xylenes	0.0424	4.5E-03	1.18E-01	1330207
Ethyl Benzene	0.0109	1.2E-03	3.02E-02	100414
Hydrogen Chloride	0.1863	2.0E-02	5.17E-01	7647010
Arsenic	0.0016	1.7E-04	4.44E-03	7440382
Cadmium	0.0015	1.6E-04	4.16E-03	7440439
Hexavalent Chromium	0.0001	1.1E-05	2.77E-04	18540299
Copper	0.0041	4.4E-04	1.14E-02	7440508
Lead	0.0083	8.9E-04	2.30E-02	7439921
Manganese	0.0031	3.3E-04	8.60E-03	7439965
Mercury	0.0020	2.1E-04	5.55E-03	7439976
Nickel	0.0039	4.2E-04	1.08E-02	7440020
Selenium	0.0022	2.3E-04	6.10E-03	7782492
Zinc	0.0224	2.4E-03	6.21E-02	7440666
Total TAC (lbs/year)			10.79	

TAC Reference: Ventura County Air Pollution Control District, 2001

Table 5.1B-8R
Rice Solar Energy Project
Wet Surface Air Cooling Unit Particulate Emissions
June 2010

Assumed
The WSAC operates 4,400 hours per year at the design recirculation rate with 5 cycles of concentration.[a]
Influent WSAC concentration based on a 50% raw water and 50% steam generator blowdown blend.
The water chemistry feeding the WSAC does not change between peak and annual

Givens

WSAC Flow Rate[b]		2,736 GPM	1,369,094	Pounds/Hr
WSAC Drift[c]			0.0005	Percent
WSAC Cycles of Concentration[d]			5	
Drift	6.8 Pounds/Hr			
TDS Concentration	885 mg/L			
Raw Water Blend	50 %			
Hours of Operation	4400 hours/year			

Component[e]	Max Design Case Cooling Tower Influent (mg/L)	Average Case Cooling Tower Influent (mg/L)	Max. TDS for Cooling Tower Discharge (mg/L)	Annual Average TDS for Cooling Tower Discharge (mg/L)	Max Hourly Cooling Tower PM10/2.5 Emissions (Lb/Hr)	Annual Cooling Tower PM10/2.5 Emissions (Tons/Year)
Total Dissolved Solids	443	443	2213	2213	0.02	0.03

References:
[a] Conservative hours of operation estimate provided by Applicant
[b] WSAC flow rate provided by WorleyParsons
[c] Drift Eliminator Efficiency is 0.0005% of flow rate
[d] WSAC Cycles of Concentration provided by WorleyParsons
[e] Water quality source from WorleyParsons

Table 5.1B-9R
Rice Solar Energy Project
Wet Surface Air Cooling Unit TAC Emissions
June 2010

Assumed:
The WSAC operates 4,400 hours per year at the design recirculation rate with 5 cycles of concentration.[a]
Influent WSAC concentration based on a 50% raw water and 50% steam generator blowdown blend.
The water chemistry feeding the WSAC does not change between peak and annual

Given:

WSAC Flow Rate [b]		2,736 GPM	1,369,094	Pounds/Hr
WSAC Drift [c]			0.0005	Percent
WSAC Cycles of Concentration [d]			5	
Drift	6.8 Pounds/Hr			
Raw Water Blend	50 %			
Hours of Operation	4400 hours/year			

Component [e]	Design Case WSAC Influent (mg/L)	Annual Case WSAC Influent (mg/L)	Design Case WSAC Discharge (mg/L)	Average Case WSAC Discharge (mg/L)	Hourly Emissions (Lb/Hr)	Annual Emissions (Lb/Year)
Arsenic	0.0125	0.0125	0.063	0.063	4.28E-07	0.002
Cadmium	0.002	0.002	0.010	0.010	6.85E-08	0.0003
Copper	0.006	0.006	0.03	0.03	2.05E-07	0.0009
Flouride	4.55	4.55	22.8	22.8	1.56E-04	0.7
Lead	0.010	0.010	0.0475	0.0475	3.25E-07	0.001
Manganese	0.003	0.003	0.02	0.02	1.03E-07	0.0005
Mercury	0.00015	0.00015	0.0008	0.0008	5.13E-09	0.00002
Nickel	0.005	0.005	0.025	0.025	1.71E-07	0.0008
Selenium	0.013	0.013	0.07	0.07	4.45E-07	0.002
Silica	16	16	80	80	5.48E-04	2.4
Vanadium	0.019	0.019	0.095	0.095	6.50E-07	0.003
Totat TAC (lb/yr)						3.1

References:
[a] Conservative hours of operation estimate provided by Applicant
[b] WSAC flow rate provided by WorleyParsons
[c] Drift Eliminator Efficiency is 0.0005% of flow rate
[d] WSAC Cycles of Concentration provided by WorleyParsons
[e] Water quality source from WorleyParsons

Notes:
The design and annual constituent concentrations are the same, only the flow will vary from peak to average. The flow provided is the estimated annual average

Attachment SII2-3
Revised Dispersion Modeling Worksheets

Rice Solar Energy Project
Table 5.1C-4R
Stack Parameters for ISCST3/AERMOD Input
June 2010

Point Sources

Source Name	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)
STACK4	Backup Generator 1	702342	3771116	243.8	6.10	747	39.7	0.61
STACK5	Backup Generator 2	702338	3771111	243.8	6.10	747	39.7	0.61
STACK6	Firewater Engine 1	702439	3771178	243.8	4.27	729	54.6	0.20
STACK7	Firewater Engine 2	702515	3771161	243.8	4.27	729	54.6	0.20
WSAC1	WSAC1	702314	3771160	243.8	3.86	293	7.19	2.88
WSAC2	WSAC2	702316	3771160	243.8	3.86	293	7.19	2.88
WSAC3	WSAC3	702319	3771160	243.8	3.86	293	7.19	2.88
WSAC4	WSAC4	702322	3771160	243.8	3.86	293	7.19	2.88

Volume Sources

Source ID	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)
TRUCK1	703593	3771433	247.4	2	23.2558	0.9302
TRUCK2	703575	3771638	251.6	2	23.2558	0.9302
TRUCK3	703522	3771837	256.9	2	23.2558	0.9302
TRUCK4	703435	3772024	261	2	23.2558	0.9302
TRUCK5	703316	3772193	264.3	2	23.2558	0.9302
TRUCK6	703171	3772338	267.9	2	23.2558	0.9302
TRUCK7	703002	3772457	270.3	2	23.2558	0.9302
TRUCK8	702815	3772544	273.4	2	23.2558	0.9302
TRUCK9	702616	3772597	275.2	2	23.2558	0.9302
TRUCK10	702411	3772615	276.2	2	23.2558	0.9302
TRUCK11	702206	3772597	276.4	2	23.2558	0.9302
TRUCK12	702007	3772544	275.5	2	23.2558	0.9302
TRUCK13	701820	3772457	274	2	23.2558	0.9302
TRUCK14	701651	3772338	271.5	2	23.2558	0.9302
TRUCK15	701506	3772193	268.8	2	23.2558	0.9302
TRUCK16	701387	3772024	264	2	23.2558	0.9302
TRUCK17	701300	3771837	260	2	23.2558	0.9302
TRUCK18	701247	3771638	257.2	2	23.2558	0.9302
TRUCK19	701229	3771433	252.5	2	23.2558	0.9302
TRUCK20	701247	3771228	247.6	2	23.2558	0.9302
TRUCK21	701300	3771029	242.9	2	23.2558	0.9302
TRUCK22	701387	3770842	239.6	2	23.2558	0.9302
TRUCK23	701506	3770673	235.5	2	23.2558	0.9302
TRUCK24	701651	3770528	234.1	2	23.2558	0.9302
TRUCK25	701820	3770409	232	2	23.2558	0.9302
TRUCK26	702007	3770322	231	2	23.2558	0.9302
TRUCK27	702206	3770269	230.1	2	23.2558	0.9302
TRUCK28	702411	3770251	230.1	2	23.2558	0.9302
TRUCK29	702616	3770269	229.9	2	23.2558	0.9302
TRUCK30	702815	3770322	230.1	2	23.2558	0.9302
TRUCK31	703002	3770409	231.3	2	23.2558	0.9302
TRUCK32	703171	3770528	232.9	2	23.2558	0.9302
TRUCK33	703316	3770673	235	2	23.2558	0.9302
TRUCK34	703435	3770842	237.1	2	23.2558	0.9302
TRUCK35	703522	3771029	240.2	2	23.2558	0.9302
TRUCK36	703575	3771228	242.9	2	23.2558	0.9302

Rice Solar Energy Project
Table 5.1C-6R
Operational Modeling Parameters - Emission Rates
June 2010

Emission Rates for 1-hr, 3-hr, 8-hr, and 24-hr Modeling

Source ID	1-hr NO_2		1-hr CO		8-hr CO		1-hr SO_2		3-hr SO_2		24-hr SO_2		24-hr PM_{10}		24-hr $PM_{2.5}$	
	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)
STACK4	5.69E+00	4.51E+01	7.04E-01	5.59E+00	8.80E-02	6.99E-01	5.68E-03	4.51E-02	1.90E-03	1.50E-02	2.37E-04	1.88E-03	1.40E-03	1.11E-02	1.40E-03	1.11E-02
STACK5	5.69E+00	4.51E+01	7.04E-01	5.59E+00	8.80E-02	6.99E-01	5.68E-03	4.51E-02	1.90E-03	1.50E-02	2.37E-04	1.88E-03	1.40E-03	1.11E-02	1.40E-03	1.11E-02
STACK6	2.40E-01	1.91E+00	4.66E-02	3.70E-01	5.83E-03	4.63E-02	4.18E-04	3.32E-03	1.40E-04	1.11E-03	1.74E-05	1.38E-04	3.67E-04	2.92E-03	3.67E-04	2.92E-03
STACK7	2.40E-01	1.91E+00	4.66E-02	3.70E-01	5.83E-03	4.63E-02	4.18E-04	3.32E-03	1.40E-04	1.11E-03	1.74E-05	1.38E-04	3.67E-04	2.92E-03	3.67E-04	2.92E-03
WSAC1	-	-	-	-	-	-	-	-	-	-	-	-	4.78E-04	3.79E-03	4.78E-04	3.79E-03
WSAC2	-	-	-	-	-	-	-	-	-	-	-	-	4.78E-04	3.79E-03	4.78E-04	3.79E-03
WSAC3	-	-	-	-	-	-	-	-	-	-	-	-	4.78E-04	3.79E-03	4.78E-04	3.79E-03
WSAC4	-	-	-	-	-	-	-	-	-	-	-	-	4.78E-04	3.79E-03	4.78E-04	3.79E-03
TRUCK(1-36)	8.71E-03	6.91E-02	3.89E-03	3.09E-02	4.32E-04	3.43E-03	1.18E-05	9.38E-05	1.18E-05	9.38E-05	4.38E-07	3.47E-06	6.59E-03	5.23E-02	6.73E-04	5.34E-03

Emission Rates for Annual Modeling

Source ID	Annual NO_2		Annual SO_2		Annual PM_{10}		Annual $PM_{2.5}$	
	(g/s)	(tpy)	(g/s)	(tpy)	(g/s)	(tpy)	(g/s)	(tpy)
STACK4	1.69E-02	5.87E-01	1.68E-05	5.85E-04	9.95E-05	3.46E-03	9.95E-05	3.46E-03
STACK5	1.69E-02	5.87E-01	1.68E-05	5.85E-04	9.95E-05	3.46E-03	9.95E-05	3.46E-03
STACK6	1.42E-03	4.95E-02	2.48E-06	8.63E-05	5.24E-05	1.82E-03	5.24E-05	1.82E-03
STACK7	1.42E-03	4.95E-02	2.48E-06	8.63E-05	5.24E-05	1.82E-03	5.24E-05	1.82E-03
WSAC1	-	-	-	-	2.40E-04	8.33E-03	2.40E-04	8.33E-03
WSAC2	-	-	-	-	2.40E-04	8.33E-03	2.40E-04	8.33E-03
WSAC3	-	-	-	-	2.40E-04	8.33E-03	2.40E-04	8.33E-03
WSAC4	-	-	-	-	2.40E-04	8.33E-03	2.40E-04	8.33E-03
TRUCK(1-36)	2.30E-04	7.99E-03	4.00E-07	1.39E-05	4.70E-03	1.63E-01	4.79E-04	1.67E-02

Rice Solar Energy Project
Table 5.1C-7R
Operational Modeling Results Summary
June 2010

Source	NO$_2$ (µg/m^3)			CO (µg/m3)		SO$_2$ (µg/m3)				PM$_{10}$ (µg/m3)		PM$_{2.5}$ (µg/m3)	
	1-hr (High 1st High)	1-hr (High 8th High)[a]	Annual	1-hr	8-hr	1-hr	3-hr	24-hr	Annual	24-hr	Annual	24-hr	Annual
ALL	-	-	0.33	-	13.4	-	0.38	0.020	3.62E-04	8.2	1.2	1.0	0.13
GEN1[b]	179	125	-	80	-	0.59	-	-	-	-	-	-	-
GEN2[b]	169	125	-	78	-	0.58	-	-	-	-	-	-	-
STACK4	172	112	0.13	69	6.1	0.56	0.17	0.0093	1.33E-04	0.06	7.84E-04	0.06	7.84E-04
STACK5	156	112	0.13	69	6.0	0.55	0.17	0.0092	1.31E-04	0.05	7.78E-04	0.05	7.78E-04
STACK6	9.8	6.6	0.01	5.7	0.50	0.051	0.015	0.0008	2.40E-05	0.02	5.12E-04	0.02	5.12E-04
STACK7	37	34	0.02	7.2	0.63	0.065	0.020	0.0011	3.12E-05	0.02	6.50E-04	0.02	6.50E-04
WSAC	-	-	-	-	-	-	-	-	-	0.099	9.92E-03	0.099	9.92E-03

[a] High 8th high 1-hr impacts are the average of the highest 8th high 1-hr result for the three years of analysis (2002-2004).